Importance of Thinking with Data

Without an understanding of how samples are taken and how data is analyzed and communicated, one cannot effectively participate in most of today's important political debates about the environment, health care, quality of education, and equity (Konold & Higgins, 2003). The educated and ethical use of data can focus critical conversations on generalizations derived from concrete information, rather than on isolated incidents and personal opinions.

Individuals who are proficient at collecting and interpreting different kinds of data have tools at their disposal to help them make good decisions in all aspects of their personal and political lives. Community organizations, for example, collect data about current and potential members in order to develop projects that most effectively meet the needs of their constituents. In their personal lives, individuals compare prices and features of products and services, investigate medical treatments, and make financial decisions.

Many careers now require an understanding of how to collect and use data effectively. For example:
- Farmers and agribusiness use crop forecasts and the results of agricultural field trials.
- Engineers are concerned with data on product performance, quality, and reliability.
- Manufacturing workers are increasingly asked to record and act on data for process control.
- People in the health sciences field struggle with data on cost and effectiveness as well as with data from medical research.
- Business runs on data of every variety: costs, profits, sales projections, market research, and much more (Moore, 1990).

We live in the information age—an age in which we are bombarded every day with data. News reports present national economic and social statistics, opinion polls, medical data, and business and financial data. For students to make sense of all these messages and to use data responsibly to persuade and communicate with others, thinking with data must be an integral part of the classroom experience.